

WHAT IS CLAIMED IS:

1. A method for adjusting an output level of audio data to be reproduced, comprising:

searching a recording medium for an audio file requested to be played, said recording medium storing a plurality of audio files;

temporarily storing audio data to be reproduced of the searched audio file and detecting an output level of the temporarily stored audio data; and

adjusting a gain of an audio output amplifier on the basis of the detected output level to output said adjusted audio data to be reproduced.

2. The method of claim 1, wherein said recording medium is adapted to store audio files of various types.

3. The method of claim 2, wherein said audio data to be reproduced is data into which said searched audio file is converted by an audio codec corresponding thereto, and wherein said recording medium is adapted to store at least one of an MP3 audio file, MPEG2 audio file and AC3 audio file.

4. The method of claim 1, wherein said detected output level is a peak level or average level of said temporarily stored audio data.

5. The method of claim 4, wherein said detected output level is determined by sampling a reduced subset of the temporarily stored audio data.

6. The method of claim 1, wherein said temporarily storing comprises:
reading said searched audio file from said recording medium and
converting it into said audio data to be reproduced;
temporarily storing audio data of an amount corresponding to a
predetermined period of time or a predetermined capacity, among the converted audio
data, under the condition that said converted audio data is not amplified and outputted;
and
detecting said output level of the temporarily stored audio data.

7. The method of claim 6, wherein said adjusting comprises:
comparing said detected output level with a predetermined reference level;
increasing the gain of said audio output amplifier when said detected
output level is determined to be lower than said reference level as a result of the
comparison and reducing the gain when said detected output level is determined to be
higher than said reference level; and
amplifying said audio data to be reproduced, at said adjusted gain, to output
said adjusted audio data at said reference level.

8. The method of claim 1, wherein said adjusting comprises:
comparing said detected output level with a predetermined reference level;
increasing the gain of said audio output amplifier when said detected
output level is determined to be lower than said reference level as a result of the
comparison and reducing the gain when said detected output level is determined to be
higher than said reference level; and

amplifying said audio data to be reproduced, at said adjusted gain, to output said adjusted audio data at said reference level.

9. The method of claim 1, wherein said detecting and adjusting are performed on an audio file basis.

10. An article including a machine-readable storage medium containing instructions for adjusting an output level of audio data to be reproduced, said instructions, when executed in a digital audio system, causing the system to:

search a recording medium for a audio file requested to be played, said recording medium storing audio files of various types;

temporarily store audio data to be reproduced of the searched audio file and detect an output level of the temporarily stored audio data; and

adjust a gain of an audio output amplifier on the basis of the detected output level to output said audio data to be reproduced at a prescribed level.

11. The article of claim 10, wherein said recording medium is adapted to store at least one of an MP3 audio file, MPEG2 audio file and AC3 audio file, and wherein said audio data to be reproduced is data into which said searched audio file is converted by an audio codec corresponding thereto.

12. The article of claim 10, wherein said detected output level is a peak level or average level of said temporarily stored audio data.

13. The article of claim 12, wherein said peak level or said average level is determined by sampling a reduced subset of the temporarily stored audio data.

14. The article of claim 10, wherein the storage medium contains instructions for causing the system to:

read said searched audio file from said recording medium and convert it into said audio data to be reproduced;

temporarily store audio data of an amount corresponding to a predetermined period of time or a predetermined capacity, among the converted audio data, under the condition that said converted audio data is not amplified and outputted; and

detect the output level of the temporarily stored audio data.

15. The article of claim 10, wherein the storage medium contains instructions for causing the system to:

compare said detected output level with a predetermined reference level;

increase the gain of said audio output amplifier when said detected output level is determined to be lower than said reference level as a result of the comparison and reduce the gain when said detected output level is determined to be higher than said reference level;

first amplify said audio data to be reproduced, at said adjusted gain, to output it at said reference level; and

second amplify the first amplified audio data to be reproduced according to a user selected output level of the audio file to be played.

16. A digital audio system, comprising: /
read means for reading an audio file requested to be played from a recording medium, said recording medium storing audio files of various types;
conversion means for converting the read audio file into audio data to be reproduced;
storage means for temporarily storing said audio data to be reproduced;
detection means for detecting an output level of the temporarily stored audio data;
audio amplifier means for amplifying and outputting said audio data to be reproduced; and
control means for controlling said read means to search said recording medium for said audio file requested to be played and read the searched audio file from said recording medium, coupled to said storage means and detection means, and for adjusting a gain of said audio amplifier means on the basis of said detected output level.

17. The system of claim 16, wherein the digital audio system is one of a portable terminal, a portable computer, and a personal computer having a playback function for said audio files, wherein said recording medium is adapted to store at least one of an MP3 audio file, MPEG2 audio file and AC3 audio file.

18. The system of claim 16, wherein said storage means is adapted to temporarily store audio data of an amount corresponding to a predetermined period of time or a predetermined capacity, among said converted audio data, under the condition

that said converted audio data is not amplified and outputted by said audio amplifier means.

19. The system of claim 16, wherein said detection means is adapted to detect a peak level or average level of said temporarily stored audio data.

20. The system of claim 19, wherein the temporarily stored audio data includes scale factors of sub-bands of audio frames of an audio file, and wherein the detection means accumulatively adds only sampled ones of the scale factors to obtain a peak level or an average value of the sub-bands that are used to determine the peak level or the average level of the audio file.

21. The system of claim 16, wherein said detection means is adapted to detect the output level of the temporarily stored audio data by sampling a reduced subset of the temporarily stored audio data.

22. The system of claim 16, wherein said control means is adapted to increase the gain of said audio amplifier means when said detected output level is lower than a predetermined reference level and reduce the gain when said detected output level is higher than said reference level to output said audio data to be reproduced, at said reference level.

23. The system of claim 16, wherein said control means is adapted to, on an audio file basis, control said storage means to temporarily store said audio data to be reproduced, control said detection means to detect the output level of the temporarily stored audio data, and adjust the gain of said audio amplifier means responsive to said

detected output level and a selected output level of the audio file requested to be played.

24. An apparatus for adjusting an output level of audio data to be reproduced, comprising:

a converter configured to receive a plurality of audio files and to convert a received audio file into audio data to be reproduced;

a detector configured to detect an output level of the audio data to be reproduced; and

a controller coupled to the converter and the detector and configured to adjust a gain of the audio data to be reproduced on the basis of said detected output level.

25. The apparatus of claim 24, comprising:

an amplifier coupled to the controller and configured to amplify the gain adjusted audio data to be reproduced for output; and

a storage device configured to temporarily store said data to be reproduced, wherein said recording medium is adapted to store at least one of an MP3 audio file, MPEG2 audio file and AC3 audio file.

26. The apparatus of claim 25, wherein said controller is adapted to, on an audio file basis, control said storage device to temporarily store said audio data to be reproduced, control said detector to detect the output level of the temporarily stored audio data, and adjust the gain of said amplifier on the basis of said detected output level and an audio volume level set by a user.

27. The apparatus of claim 26, wherein said storage device is adapted to temporarily store audio data of an amount corresponding to a predetermined period of time or a predetermined capacity, among said converted audio data, under the condition that said converted audio data is not amplified and outputted by said amplifier.

28. The apparatus of claim 27, wherein said detector is adapted to detect a peak level or average level of said audio data to be reproduced, and wherein said detector is adapted to detect the output level of the temporarily stored audio data by sampling a reduced subset of the temporarily stored audio data.

29. The apparatus of claim 24, wherein said controller is adapted to increase the gain of said audio data to be reproduced when said detected output level is lower than a predetermined reference level and reduce the gain when said detected output level is higher than said reference level to output said audio data to be reproduced, at said reference level.